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ABSTRACT

This paper presents an extension of analyses of data on the Carroll County, Georgia, Competency Based Teacher Certification Project, of which the procedure, description of measures, and method of analysis have been described in related documents. Results from two additional observation instruments are reported, and the teacher-derived competencies based on these and previous instruments are related to pupil outcomes. Analysis of data suggests little support for the use of teacher-derived competencies as descriptions of effective classroom teaching. (MB)

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Symposium

Process/Product Research in the Real World:
An Attempt to Develop and Validate
a Competency Based Teacher Certification System

Using Process/Product Relationships as the Basis of Describing
Effective Teacher Behavior

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This paper presents an extension of analyses of the data of the West Georgia Project which were reported at last year's AERA meeting (Lorentz, 1976; Soar, 1976). The procedure, description of the measures, and the method of analysis all have been described in the 1976 Lorentz paper and in a paper accompanying this one at the symposium.

The previous paper presented results from two observation instruments, the Teacher Practice Observation Record (TPOR), and the Florida Climate and Control System (FLACCS) in terms of teacher defined competencies and their relations to pupil outcomes.

In this paper, results from two additional observation instruments, Medley's Observation Schedule and Record (OSCAR) and Spaulding's STARS were added to the instruments previously reported, and the teacher derived competencies based on all four were related to pupil outcomes. Only teacher behaviors were included in the total competency measures.

Coker is Project Director and Lorentz has carried out the data reduction and analysis. The first author has been a consultant to the project since its inception.

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Major emphasis in this discussion of results will be given to linear relations between eight total competency measures and five measures of achievement from the Iowa test in grades 3-8 (Table IV, the Lorentz paper). The subtests were Vocabulary (V), Reading (R), Spelling (L_1), Arithmetic Concepts (M_1), and Arithmetic Problem Solving (M_2). Discussion of relationships between the sub-keys of the competencies (sub-competencies) and gain will be brought in, subsidiary to the discussion of the relationships with the total competency measures.

There was little observational data to reflect Competency 1, Gathers and Uses Information Relating to Individual Differences among Students, so it will not be reported.

Competency 2, Organizes Pupils, Resources, and Materials for Effective Instruction, was significantly positively related to reading growth. Examination of the sub-competency measures indicates that the relationship probably came largely from Competency 2C, Gathers Multi-level Materials, which was related with reading, significant at the one percent level. This is somewhat surprising, since that sub-competency contains only one item from the TPOR, Teacher Makes a Wide Range of Information Available, especially since that one item measure had a reliability of .35.

These results are in line with the expectation that gathering materials which are appropriate to different levels of student attainment should facilitate pupil gain. It seems appropriate to note, however, that other studies which have looked at variety of materials have produced at best mixed results, relating at least as often negatively as positively (McDonald and Elias, 1976).

To speculate about why these results may be positive, in contrast to others, it seems possible that other studies have been conducted in settings where average classrooms were well equipped; in such a setting additional

materials would add little. But if materials were not in generous supply, greater availability may be facilitative of achievement gain.

Competency 3, Demonstrates Ability to Communicate Effectively with Students, as a total competency was not related to any achievement measure. However, sub-competency B, Pauses, Elicits and Responds to Student Questions, related significantly negatively to vocabulary growth. This is contrary to expectation since the sub-competency reflects task focus in a variety of settings, and teacher attentiveness to pupil needs.

Competency 4, Assists Students in Using a Variety of Communication Techniques, reflects the teacher's ability to facilitate communication skill in pupils, rather than the teacher's demonstration of communication skill as the previous competency does, although there is considerable overlap between the two. This competency related negatively to both vocabulary and spelling growth. The relationship for vocabulary is supported by sub-competency A, Demonstrates Proper Listening Skills, and sub-competency B, Respects Individual's Right to Speak. These sub-competencies in general reflect individual contact between teacher and pupils, with the teacher offering positive reinforcement to pupils who either seek help or who are involved in self-directed activities and who are behaving appropriately or inappropriately. The negative relation for individual contact agrees, at least by implication, with the finding of Stallings and Kaskowitz (1974) that pupils learned more when taught in large groups (9 or more) than in small groups. None of the sub-competencies was significantly related to spelling. The negative relationships for vocabulary and spelling parallel results of Brophy and Evertson (1974) who found negative relationships between teacher praise and gain when students came to the teacher seeking help, or bringing work. Sub-competency A was significantly positively related to achievement in arithmetic problem solving, however, which was counter to the

results cited above. These opposite findings across subject-matters are difficult to understand. It may be that the most useful teacher behavior depends on the nature of the task or the context to which it is presented. It seems possible that the reversal of the direction of the relationship of sub-competency A from negative for vocabulary to positive for arithmetic may represent the usefulness of individual help to students in arithmetic, whereas vocabulary growth may be facilitated by maximum exposure of the pupil to an adult role model in language. To the extent that the teacher works with individual pupils, each pupil's exposure is limited in comparison with the teacher who works with large groups. This tentative explanation for arithmetic does not agree with the findings of Good and Grouws (1975), however, who found greatest arithmetic gain for teachers who taught the class as a whole rather than individually or in small groups.

Total Competency 5, Assists Students in Dealing with Their Misconceptions or Confusions, Using Relevant Clues and Techniques, related negatively with vocabulary gain.

This significant negative relationship apparently was derived partially from all of the sub-competencies, although only sub-competency E, Provides Feedback to the Pupil on his Behavior, reached the level of significance. This measure reflects a gentle noncoercive management style on the part of the teacher.

It may be that this relates to a finding in an earlier study (Soar and Soar, 1973) which found greater amounts of this sort of gentle management behavior to be positively related to gain for low SES pupils, but to be negatively related to gain for high SES pupils. The implication appears to be that for all but the lowest SES pupils a minimum of management behavior on the part of the teacher is required, but that many teachers provide much more of this than is functional. There is also data, perhaps less

closely related, indicating that high SES pupils showed greatest achievement gain under a management style characterized as "critical demandingness" (Brophy and Evertson, 1974), rather than one which was characterized by warmth and acceptance. The Soar and Soar study also found a warm emotional climate to be related to gain for low SES pupils, but not for high SES pupils. This sub-competency was also negatively related to spelling gain.

Sub-competency B, Demonstrates Flexibility in Classroom Management Practices, however, related positively to both arithmetic measures. This is the same pattern observed with Competency 4 for teacher behaviors which were negatively related to verbal measures (vocabulary and spelling) but were related positively to arithmetic. The reappearance of that pattern of reversal for more than one competency does not reflect a replication of the trend, however, since a major block of items from STARS occurs in a number of the sub-competencies. These items are sufficiently numerous (ranging from 20 to 30 from competency to competency) so as to exert major influence.

Sub-competency 6, Responds Appropriately to Coping Behavior of Students, did not relate significantly as an overall measure to any of the achievement outcomes. Sub-competency B, Recognizes and Treats Individual Student Behavior, was positively related to arithmetic concepts gain, however, and D, Accepts Necessity of Dealing with Individual Students, was positively related to both arithmetic measures. The same block of STARS items mentioned in the previous competency occurs in both of these sub-competencies, so that the same interpretation of dealing with individuals may apply here that was discussed earlier.

Overlap of items from competency to competency is a problem which was discussed earlier (Soar, 1976), but appears to be one of the basic problems in dealing with teacher derived competencies. The descriptions of competencies, as teachers produce them, tend to sound similar, and seem to imply similar teacher behaviors when the attempt is made to operationalize them.

Competency 7, Uses a Variety of Methods and Materials to Stimulate and Promote Pupil Learning, was unrelated either as a total competency measure or in any of the sub-competency measures to any of the achievement outcomes.

Competency 8, Promotes Self Awareness and Positive Self Concept in Students, was negatively related to achievement gain in vocabulary and was almost significant for spelling. The relation with vocabulary appeared to come from non-significant but moderate negative relationships for all three sub-competencies, Evidence of a Personal One-to-One Relationship with Students, Evidence of Praise and/or Rewards in Operation and Supportive Classroom Management. The relationship with spelling appears to come primarily from the latter two of these sub-competencies. There appear to be three common threads in this set of sub-competencies, all of which have been mentioned earlier, the one-to-one relationship between teacher and pupils, the use of praise, and the extent of noncoercive management activities on the part of the teacher, all of which have related opposite to expectation with measures of verbal achievement gain in other competencies. The total competency was not related to arithmetic problem solving but the sub-competency reflecting a one-to-one relationship was positively related. This relationship involves the same cluster of STARS items which has related oppositely from verbal to arithmetic measures in previous composites.

Competency 9, Reacts with Sensitivity to the Needs and Feelings of Others, was not significantly related as a total competency to any of the achievement measures, but sub-competency C, Evidence of Opportunity for One-to-One Counseling, was significantly negatively related to vocabulary. These results appear to parallel those which have been mentioned earlier in which the one-to-one relationship between teacher and pupils was nonfunctional for growth in verbal measures.

In several interpretations there has been the suggestion of interaction of the behavior measure with pupil SES. Tests of the interaction of each of the competencies and sub-competencies with mean socioeconomic status of the classroom have been carried out. Significant interactions were not found for any of the total competency measures, but in a number of cases the interaction term was rejected by the analysis because its tolerance level was too small. This means that the product term which represented the interaction correlated so highly with one of its components that estimating the extent of each of the relationships with gain became highly uncertain, and the analysis rejected the term. Because of this problem, and the uncertainty of the meaning of the interactions, none of the interactions has been reported.

Nonlinear relations between each competency and sub-competency with each of the outcome measures have been tested using the Polynomial Regression program from the Biomedical Computer Program package (Dixon, 1970). None of the nonlinear relations from the total competencies were significant. For the sub-competencies, scattered relations with the outcome measures were significantly nonlinear, but in 11 of 13 plots, the relations were upright U's, which are difficult or impossible to interpret. Since most of the relationships were of this form, the ones which were not have not been reported.

Summary and Implications

The gathering of a variety of materials by the teacher was related in the expected direction with reading gain--the only significant relation for reading.

At least by interpretation, there seem to be three threads running through the results which are counter to expectation. Praise, attention to individual pupils, and a non-coercive style of classroom management all were negatively related with gain in verbal achievement. These interpretations, and the support they have from other recent studies, suggest that some of education's most cherished beliefs about the nature of teaching which promotes pupil achievement may be in error, or at least that the circumstances under which the beliefs are true are more limited than has earlier been thought. The frequent reversal of direction of relationship from verbal to arithmetic gain measures also supports this implication.

Analysis of the relations between sub-competencies and gain suggests that the competencies often hide more than they reveal. Aggregating data to the level of the overall competency is probably too gross a procedure to be useful. For example, there are instances when sub-competencies relate in opposite directions to the same outcome measure, even though logically they appear to be indicators of the same competency.

Another common problem with the competencies was the reoccurrence of similar blocks of items in several sub-competencies. Instrument authors who identified items to go into the sub-competencies repeatedly had the feeling that they restated in different ways a relatively small number of aspects of classroom behaviors, so that it was appropriate to repeat the use of items. However, it is clear that this assumes that the authors of the instruments understood the meaning the teachers expressed in their

competencies, and identified them by appropriate items from the instruments. The extent to which that assumption was met is uncertain, of course.

What does seem clear is that there is little support in these results for the use of teacher-derived competencies as descriptions of effective classroom teaching.

References

- Brophy, J. E., & Evertson, C. M. The Texas teacher effectiveness project: Presentation of non-linear relationships and summary discussion. Report No. 74-6. Austin: Research and Development Center, University of Texas, 1974.
- Dixon, W. J. BMD biomedical computer programs. Los Angeles: Health Sciences Computing Facility, University of California, 1965.
- Good, T. L., & Grouws, D. A. Process-product relationship in fourth grade mathematics classrooms. (NIE grant NEG-00-3-0123). Columbia: University of Missouri, October 1975.
- Lorentz, J. The design of a study to validate teacher competencies in terms of pupil growth. In H. Coker (Chairman), Classroom Observation and Teacher Competency. Symposium presented at the meeting of the American Educational Research Association, San Francisco, 1976.
- McDonald, F. J. & Elias, P. The effects of teaching performance on pupil learning: Beginning teacher evaluation study, phase II, Final Report, Volume I. Princeton, N. J.: Educational Testing Service, 1976.
- Soar, R. S. & Soar, R. M. Classroom behavior, pupil characteristics, and pupil growth for the school year and for the summer. Gainesville, Florida: Institute for Development of Human Resources, University of Florida,

1973. JSAS Catalog of Selected Documents in Psychology, 1975, 5,
200. (Ms. No. 873)

Soar, R. S. Validity of two sign systems based on inductively derived
teacher competencies. In H. Coker (Chairman), Classroom Observation
and Teacher Competency. Symposium presented at the meeting of the
American Educational Research Association, San Francisco, 1976.

Stallings, J. A. & Kaskowitz, D. H. Follow through classroom observation
evaluation. Contract OEC-0-8522480-4633(100) from the Office of
Education, Department of Health, Education and Welfare to Stanford
Research Institute, Menlo Park, California, 1974.